

The Chester and the Chesapeake Bay

The Chester is a pipe-shaped river with its narrow stem in Delaware and its wide bowl opening into the Bay between Eastern Neck Island and the north end of Kent Island. Ducks, geese, bald eagles, and other waterloving birds make their homes along the 60-mile course of the river. Hunters flock to the Chester in the fall because the river is on a major migration route for Canada geese.

The waters of the Chester are spawning and nursery areas for many fish species, including alewife, shad, blueback, and perch. Another anadromous (freshwater spawning) fish found in the Chester is the striped bass. The "striper" is a very valuable commercial species, and its decline in population in recent years has led to strict laws limiting striped bass harvest.

Both the fish-filled waters and the transportation opportunities provided by the well-watered region, attracted settlers to the Chester ever since John Smith explored the river in 1608. Between 1730 and 1775, Chestertown was the center of a shipping economy that flourished because of the relatively great depth of the river's channel. To this day, the river provides those who live along its shores with many recreational and commercial opportunities.

THE BASIN

Both gently rolling hills and broad level plains are found within the 390-square-mile Chester River basin. The fertile land of the basin has long been cultivated by farmers; fully 70 percent of the basin is cropland. Traditionally, those who did not farm the land worked the river as watermen. In 1984, almost 2,000 people made a living pulling fish, oysters, clams, and blue crabs from the river.

Many changes came to the Chester basin after the Chesapeake Bay Bridge opened in 1952. The historical division between upcountry farming communities and riverside fishing towns persists, but is being overshadowed by the influx of newcomers who neither fish nor farm.

Twenty-eight marinas help satisfy the increased demand for water-oriented recreation that has accompanied the increase in residents and visitors. New homes and businesses are also proliferating throughout the basin, especially on Kent Island and along the Route 50/301 corridor.

Between 1973 and 1981, there was a 45 percent increase in the number of developed acres in the Chester basin. Urbanization has meant a decline in the size of forests and wetlands of the region. Farmland acreage has also declined, but only slightly.

THE GREAT DECLINE

Land use in a river basin generally affects the health of the river. For the Chester, the combination of agriculture and urbanization has spelled trouble. Sharp declines in river grass, oysters, shellfish, and certain fish species all point to a river in distress.

Submerged aquatic vegetation--SAV--commonly known as seagrass, is an important

food source for waterfowl. The grasses also provide spawning and nursery areas for fish. But areas of aquatic vegetation shrank steadily over a period of 15 years, and by 1982, submerged aquatic vegetation had vanished from the Chester. Surveys of the river since 1982 have shown no appreciable increase in abundance.

Oysters and shellfish have also suffered as the quality of the Chester's waters declined. In 1970, oysters, which are harvested from the lower, saltier reaches of the river, suffered a dramatic, and still unexplained, population crash. The natural population has never recovered and commercial oyster harvest is only possible today through annual artificial "seeding."

Some shellfish, including oysters, concentrate water pollutants in their tissues. If concentrations of harmful substances, such as pathogenic bacteria, heavy metals, or pesticides, get too high, the shellfish could cause sickness in people who eat them. Parts of the upper Chester as well as significant portions of the Wye River are among the areas closed to shellfish harvesting in recent years because of too high concentrations of harmful bacteria in the water.

The fish of the Chester have not escaped the ill effects of pollution. It appears that salt water spawning fish and some pollution-tolerant species such as catfish and carp are replacing certain freshwater-spawning fish including striped bass and shad. Striped bass harvest plummeted from 84,000 pounds in 1981 to a mere 18,000 pounds in 1983.

THE CULPRITS

What has happened to the Chester to put its esthetic, commercial, and recreational values in jeopardy?

"Point" sources of pollution are ones that can be pinpointed to a specific site. In the Chester River basin, publicly owned sewage treatment works (POTWs) are the major contributors of point source pollutants--in this case, phosphorous and nitrogen.

For the most part, POTWs (and other point sources) in the Chester basin can be monitored and their outflows regulated.

A big issue relating to point sources in the Chester basin is how to accommodate future population. Certain POTWs are at or near capacity. Increasing this capacity leads to questions of whether nutrient loads should be allowed to increase, or advanced treatment --which removes more nutrients but costs more--should be required.

Nonpoint source pollution is a very difficult phenomenon to measure accurately. In the Chester, most pollution comes from nonpoint sources. Water that runs off farms after a storm accounts for much of the nonpoint pollution in the Chester. The nutrients from farm and garden fertilizers, primarily nitrogen and phosphorus, "overenrich" the river's algae causing "algal blooms." Algal blooms lower the oxygen content of the water and this, along with increased sediment loads brought into the river from eroding farms and new development, leads to water conditions that make life difficult for river grasses, shellfish, and fish.

Another major nonpoint pollution problem is bacterial contamination that results from

septic system failure and overboard dumping from private vessels.

Finally, construction erosion and urban stormwater runoff can convey excess amounts of sediment, nutrients and other pollutants from developing areas to the river.

WHAT CAN BE DONE

A management plan for the Chester drawn up by the State of Maryland recommended that priority attention be given to the control of nonpoint pollution. State and local efforts, the report said, should concentrate on basinwide control of sediment and nutrients from agriculture by encouraging farmers to use no-till farming methods, plant buffer strips, and consult with the Soil Conservation Service to develop farm conservation plans.

Other recommendations:

- Storm water runoff from newly developed areas should be controlled through careful enforcement of local storm water management ordinances.
- State and local programs should aggressively strive to preserve as much of the remaining forests and wetlands as possible, and to encourage reforestation whenever possible. Both wetlands and forests provide important water quality benefits.
- Bacterial and nutrient pollution from overboard pollution must be reduced through education and the placement of pumpout facilities at new marinas.

OTHER ISSUES

Agricultural channelization has been a controversial issue in the Chester Basin. The Soil Conservation Service has proposed to spend between \$7.5 to \$10 million to drain approximately 14,000 to 22,000 acres of periodically flooded agricultural lands and extend the growing season. Drainage project opponents maintain that this "ditching" would sacrifice valuable wetlands, forestlands, and increase the downstream sediment and nutrient loads. The choice between improved agricultural lands and water quality benefits is often a difficult one to make.

WHAT YOU CAN DO

There are many things you do around your home, on your farm, or on your boat that affect the health of the Chester. Here are ways you can help keep the Chester clean and alive.

Around your home:

- *Don't over-fertilize your lawn*
- *Learn and use erosion control techniques*
- *Have your septic tank cleaned every five years*
- *Don't waste water*
- *Don't wash toxics down the drain*

On your farm:

- *Get help from the local Soil Conservation District or other conservation agency to develop a farm conservation plan.*
- *Apply for cost-share funds to implement your farm plan*
- *Keep cattle away from streams*

On your boat:

- *Be sure your vessel is equipped with an appropriate marine sanitation device*
- *When using motor oil, paint, and gasoline around your boat, take care that none gets into the water*